

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

**NOTIFICATION OF ELECTION**  
**(PCT Rule 61.2)**

Date of mailing:  02 March 2000 (02.03.00)	in its capacity as elected Office
International application No.:  PCT/GB99/02716	Applicant's or agent's file reference:  PPD 50348/WO
International filing date:  17 August 1999 (17.08.99)	Priority date:  18 August 1998 (18.08.98)
Applicant:  BROEKAERT, Willem, Frans et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International preliminary Examining Authority on:  
18 November 1999 (18.11.99)

in a notice effecting later election filed with the International Bureau on:

2. The election  was  
 was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO  34, chemin des Colombettes  1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer:  J. Zahra  Telephone No.: (41-22) 338.83.38</p>
--	--

763076

5600

## P. PENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

Date of mailing (day/month/year) 11 April 2001 (11.04.01)
Applicant's or agent's file reference PPD 50348/WO
International application No. PCT/GB99/02716

## From the INTERNATIONAL BUREAU

To:

HUSKISSON, Frank, Mackie  
Intellectual Property Department  
Syngenta Limited  
P.O. Box 3538  
Jealott's Hill Research Station  
Bracknell, Berkshire RG42 6YA  
ROYAUME-UNI

## IMPORTANT NOTIFICATION

International filing date (day/month/year)  
17 August 1999 (17.08.99)

## 1. The following indications appeared on record concerning:

the applicant  the inventor  the agent  the common representative

## Name and Address

ZENECA LIMITED  
15 Stanhope Gate  
London W1Y 6LN  
United Kingdom

State of Nationality GB	State of Residence GB
----------------------------	--------------------------

Telephone No.

Facsimile No.

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

the person  the name  the address  the nationality  the residence

## Name and Address

SYNGENTA LIMITED  
Fernhurst  
Haslemere  
Surrey GU27 3JE  
United Kingdom

State of Nationality GB	State of Residence GB
----------------------------	--------------------------

Telephone No.

Facsimile No.

Teleprinter No.

## 3. Further observations, if necessary:

This is only a change of name and address. No transfer of patent or other rights has occurred. Agent's address has also been changed accordingly.

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Maria Victoria CORTIELLO

Telephone No.: (41-22) 338.83.38

003960089

**PATENT COOPERATION TREATY**  
**PCT**

**INTERNATIONAL SEARCH REPORT**

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference  <b>PPD 50348/WO</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No.  <b>PCT/GB 99/ 02716</b>	International filing date (day/month/year)  <b>17/08/1999</b>	(Earliest) Priority Date (day/month/year)  <b>18/08/1998</b>
Applicant  <b>ZENECA LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  **Certain claims were found unsearchable** (See Box I).

3.  **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

**GENETIC METHOD FOR THE EXPRESSION OF POLYPROTEINS IN PLANTS**

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

2

None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/02716

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/29 C12N15/62 C12N15/82 C07K14/415 C07K7/08  
A01H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 24486 A (ZENECA LTD ;ATTENBOROUGH SHEILA (GB); BROEKAERT WILLEM FRANS (BE);) 14 September 1995 (1995-09-14) cited in the application see esp. p.10 3.par. - p.14; example 12 ---	1-7, 9-11, 20-24, 26,30, 32-34
X	WO 95 17514 A (RYAN MARTIN DENIS ;HALPIN CLAIRE (GB); ZENECA LTD (GB)) 29 June 1995 (1995-06-29) cited in the application	33
A	see esp. SEQ ID NO:1 ---	1-32
X	WO 97 39134 A (SCOTTISH CROP RESEARCH INST ;WILSON THOMAS MICHAEL AUBREY (GB); CH) 23 October 1997 (1997-10-23) see figure 4 ---	33
	-/-	

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## ° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance  
 "E" earlier document but published on or after the international filing date  
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
 "O" document referring to an oral disclosure, use, exhibition or other means  
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.  
 "&" document member of the same patent family

Date of the actual completion of the international search

3 December 1999

Date of mailing of the international search report

22/12/1999

Name and mailing address of the ISA  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Kania, T

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/02716

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BECK VON BODMAN S. ET AL.: "Expression of multiple eukaryotic genes from a single promoter in <i>Nicotiana</i> " BIO/TECHNOLOGY, vol. 13, 1995, pages 587-591, XP002124728 cited in the application the whole document ---	1-32
A	US 5 162 601 A (SLIGHTOM JERRY L) 10 November 1992 (1992-11-10) the whole document ---	1-32
A	WO 95 12669 A (TEXAS A & M UNIVERSITY SYST) 11 May 1995 (1995-05-11) the whole document ---	1-32
A	WO 95 21249 A (SCRIPPS RESEARCH INST) 10 August 1995 (1995-08-10) the whole document ---	1-32
A	TAILOR R. ET AL.: "A novel family of small cysteine-rich antimicrobial peptides from seed of <i>Impatiens balsamina</i> is derived from a single precursor protein" JOURNAL OF BILOGICAL CHEMISTRY, vol. 272, no. 39, 1997, pages 24480-24487, XP002124729 cited in the application see esp. p.24486 1. column ---	1-34
A	DE BOLLE M. ET AL.: "Antimicrobial peptides from <i>Mirabilis jalapa</i> and <i>Amaranthus caudatus</i> : expression, processing, localization and biological activity in transgenic plants" PLANT MOLECULAR BIOLOGY, vol. 31, 1996, pages 993-1008, XP002124730 cited in the application the whole document ---	1-34
A	URWIN ET AL: "Enhanced transgenic plant resistance to nematodes by dual proteinase inhibitor constructs" PLANTA, DE, SPRINGER VERLAG, vol. 204, no. 204, page 472-479-479 XP002097968 ISSN: 0032-0935 cited in the application the whole document ---	1-32
		-/-

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/02716

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZHU Q ET AL: "ENHANCED PROTECTION AGAINST FUNGAL ATTACK BY CONSTITUTIVE COEXPRESSION OF CHITINASE AND GLUCANASE GENES IN TRANSGENIC TOBACCO" BIO-TECHNOLOGY, (AUG 1994) VOL. 12, NO. 8, PP. 807-812. ISSN: 0733-222X., XP002124731 the whole document -----	1-32

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB 99/02716

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9524486	A 14-09-1995	AU 685920 B AU 1856295 A BR 9507034 A CA 2180353 A CN 1143978 A EP 0749485 A JP 9509844 T US 5861480 A		29-01-1998 25-09-1995 02-09-1997 14-09-1995 26-02-1997 27-12-1996 07-10-1997 19-01-1999
WO 9517514	A 29-06-1995	AU 696643 B AU 1276295 A EP 0736099 A JP 9506773 T US 5846767 A		17-09-1998 10-07-1995 09-10-1996 08-07-1997 08-12-1998
WO 9739134	A 23-10-1997	AU 2572597 A EP 0886680 A		07-11-1997 30-12-1998
US 5162601	A 10-11-1992	NONE		
WO 9512669	A 11-05-1995	US 5491076 A AU 1408095 A US 5766885 A ZA 9408561 A		13-02-1996 23-05-1995 16-06-1998 30-06-1995
WO 9521249	A 10-08-1995	AU 1743795 A		21-08-1995

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PPD 50348/WO	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB99/02716	International filing date (day/month/year) 17/08/1999	Priority date (day/month/year) 18/08/1998
International Patent Classification (IPC) or national classification and IPC C12N15/29		
Applicant ZENECA LIMITED et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>		

Date of submission of the demand 18/11/1999	Date of completion of this report 06.11.2000
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx. 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Burkhardt, P Telephone No. +49 89 2399 7456



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02716

## I. Basis of the report

1. This report has been drawn on the basis of (substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

**Description, pages:**

1-44 as originally filed

**Claims, No.:**

1-35 as originally filed

### **Drawings, sheets:**

1/32-32/32 as originally filed

- 2 The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

3.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

- #### 4 Additional observations, if necessary:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02716

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims 12 - 21, 28, 29, 35
	No: Claims 1 - 11, 22 - 27, 30 - 34
Inventive step (IS)	Yes: Claims 14
	No: Claims 12, 13, 15 - 21, 28, 29, 35
Industrial applicability (IA)	Yes: Claims 1 - 35
	No: Claims

**2. Citations and explanations**

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/02716

**Re Item I**

**Basis of the opinion**

This written opinion is also based on the Sequence Listing (pages 1-64) as originally filed.

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

The following documents (D) are referred to in this communication; the numbering is following the order of the International Search Report:

- D1 WO-A-9524486 (Zeneca)
- D2 WO-A-9517514 (Zeneca)
- D3 WO-A-9739134 (Scottish Crop Research Institute)
- D4 Beck von Bodman *et al.*, 1995. Bio/Technology 13:587-591.
- D5 US-5162601 (The Upjohn Company)

**1. Article 33(2) PCT (Novelty)**

1.1 Present claim 1 is directed to a method of improving expression levels of one or more proteins in a plant by expressing the proteins from one DNA construct. The polyprotein contains a linker propeptide that is post-translationally processed to release the component proteins.

1.2 Document D1 (page 10, third paragraph) discloses a method for the expression of polyproteins in transgenic plants where the component peptides are separated by cleavage sites and where the polyprotein is post-translationally processed into the component proteins. The protein components may be identical (page 14, second paragraph), thus increasing and improving the expression of said protein compared to the expression of a single protein. The polyprotein consists of antimicrobial proteins from *Impatiens balsamina* or *Aralia chinensis*

(page 3, paragraphs 3-5).

1.3 Thus, D1 anticipates the subject-matter of present claim 1. The same holds true for present dependent claims 2 - 11 as well as for claims 22 - 26 addressing the use of propeptides as linkers in polyproteins and claims 27 and 30 - 34 addressing the corresponding DNA constructs and the linker sequences. These claims do not meet the requirements of Article 33(2) PCT.

**2. Article 33(3) PCT (Inventive step)**

2.1 Present claims 12, 13 and 14 - 21 may be novel but they are not based on an inventive concept. It does not involve an inventive step to vary the linker sequences of the polyprotein or to employ other known antimicrobial proteins like those from *Dahlia* or *Amaranthus*. Furthermore, D1 (page 12, first paragraph) already suggested the use of viral sequences as linkers in polyproteins. Linkers with protease processing sites have already been employed in the prior art (e.g. D4 and D5) and it does also not involve an inventive step to combine known linkers with known methods.

Present claims 12 - 21 do not meet the requirements of Article 33(3) PCT. The same holds true for present claims 28, 29 and 30 addressing the corresponding DNA constructs and linker sequences.

2.2 Present claim 14 may be based on an inventive concept once the objections under Item VIII have been overcome.

**Re Item VIII**

**Certain observations on the international application**

1. Present claim 14 does not meet the requirements of Rule 6.3 PCT. The term chimeric propeptide does not constitute a definition through a technical parameter. It is not apparent what such a propeptide may comprise and thus places an undue burden on others seeking to establish the extent of protection and therefore renders the claim as a whole unclear (Article 6 PCT).

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/GB99/02716

2. A similar objection applies to the terms Dm-AMP1 or Ac-AMP2 used in present claims 12 and 28.

## INTERNATIONAL SEARCH REPORT

FEB 2001

International Application No

PCT/GB 99/02716

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/29 C12N15/62 C12N15/82 C07K14/415 C07K7/08  
A01H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 24486 A (ZENECA LTD ; ATTENBOROUGH SHEILA (GB); BROEKAERT WILLEM FRANS (BE);) 14 September 1995 (1995-09-14) cited in the application  see esp. p.10 3.par. - p.14; example 12 ---	1-7, 9-11, 20-24, 26, 30, 32-34
X	WO 95 17514 A (RYAN MARTIN DENIS ; HALPIN CLAIRE (GB); ZENECA LTD (GB)) 29 June 1995 (1995-06-29) cited in the application see esp. SEQ ID NO:1  ---	33
A	---	1-32
X	WO 97 39134 A (SCOTTISH CROP RESEARCH INST ; WILSON THOMAS MICHAEL AUBREY (GB); CH) 23 October 1997 (1997-10-23) see figure 4  ---	33
	-/-	

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## ' Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
3 December 1999	22/12/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Kania, T

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/02716

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	BECK VON BODMAN S. ET AL.: "Expression of multiple eukaryotic genes from a single promoter in Nicotiana" BIO/TECHNOLOGY, vol. 13, 1995, pages 587-591, XP002124728 cited in the application the whole document ---	1-32
A	US 5 162 601 A (SLIGHTOM JERRY L) 10 November 1992 (1992-11-10) the whole document ---	1-32
A	WO 95 12669 A (TEXAS A & M UNIVERSITY SYST) 11 May 1995 (1995-05-11) the whole document ---	1-32
A	WO 95 21249 A (SCRIPPS RESEARCH INST) 10 August 1995 (1995-08-10) the whole document ---	1-32
A	TAILOR R. ET AL.: "A novel family of small cysteine-rich antimicrobial peptides from seed of Impatiens balsamina is derived from a single precursor protein" JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 272, no. 39, 1997, pages 24480-24487, XP002124729 cited in the application see esp. p.24486 1. column ---	1-34
A	DE BOLLE M. ET AL.: "Antimicrobial peptides from Mirabilis jalapa and Amaranthus caudatus: expression, processing, localization and biological activity in transgenic plants" PLANT MOLECULAR BIOLOGY, vol. 31, 1996, pages 993-1008, XP002124730 cited in the application the whole document ---	1-34
A	URWIN ET AL: "Enhanced transgenic plant resistance to nematodes by dual proteinase inhibitor constructs" PLANTA, DE, SPRINGER VERLAG, vol. 204, no. 204, page 472-479-479 XP002097968 ISSN: 0032-0935 cited in the application the whole document ---	1-32
		-/-

**INTERNATIONAL SEARCH REPORT**

International Application No

PCT/GB 99/02716

**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZHU Q ET AL: "ENHANCED PROTECTION AGAINST FUNGAL ATTACK BY CONSTITUTIVE COEXPRESSION OF CHITINASE AND GLUCANASE GENES IN TRANSGENIC TOBACCO" BIO-TECHNOLOGY, (AUG 1994) VOL. 12, NO. 8, PP. 807-812. ISSN: 0733-222X., XP002124731 the whole document -----	1-32

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/02716

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
WO 9524486	A 14-09-1995	AU 685920	B	29-01-1998	
		AU 1856295	A	25-09-1995	
		BR 9507034	A	02-09-1997	
		CA 2180353	A	14-09-1995	
		CN 1143978	A	26-02-1997	
		EP 0749485	A	27-12-1996	
		JP 9509844	T	07-10-1997	
		US 5861480	A	19-01-1999	
WO 9517514	A 29-06-1995	AU 696643	B	17-09-1998	
		AU 1276295	A	10-07-1995	
		EP 0736099	A	09-10-1996	
		JP 9506773	T	08-07-1997	
		US 5846767	A	08-12-1998	
WO 9739134	A 23-10-1997	AU 2572597	A	07-11-1997	
		EP 0886680	A	30-12-1998	
US 5162601	A 10-11-1992	NONE			
WO 9512669	A 11-05-1995	US 5491076	A	13-02-1996	
		AU 1408095	A	23-05-1995	
		US 5766885	A	16-06-1998	
		ZA 9408561	A	30-06-1995	
WO 9521249	A 10-08-1995	AU 1743795	A	21-08-1995	

09/463977  
77  
Translation DC

PATENT COOPERATION TREATY

PCT

5630

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

5006

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>B431SMOP778</b>	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. <b>PCT/JP98/03535</b>	International filing date (day/month/year) <b>07 August 1998 (07.08.1998)</b>	Priority date (day/month/year) <b>12 August 1997 (12.08.1997)</b>
International Patent Classification (IPC) or national classification and IPC <b>C12N 15/52, 1/19, C12P 13/14 // C12N 9/06, (C12N 1/19, C12R 1:13) (C12N 1/19, C12R 1:15)</b>		
Applicant <b>AJINOMOTO CO., INC.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of _____ sheets.
3. This report contains indications relating to the following items: <ul style="list-style-type: none"><li>I <input checked="" type="checkbox"/> Basis of the report</li><li>II <input type="checkbox"/> Priority</li><li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li><li>IV <input type="checkbox"/> Lack of unity of invention</li><li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li><li>VI <input type="checkbox"/> Certain documents cited</li><li>VII <input type="checkbox"/> Certain defects in the international application</li><li>VIII <input type="checkbox"/> Certain observations on the international application</li></ul>

Date of submission of the demand <b>04 February 1999 (04.02.1999)</b>	Date of completion of this report <b>29 October 1999 (29.10.1999)</b>
Name and mailing address of the IPEA/JP Japanese Patent Office, 4-3 Kasumigaseki 3-chome Chiyoda-ku, Tokyo 100-8915, Japan Facsimile No.	Authorized officer Telephone No. (81-3) 3581 1101

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP98/03535

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

 the international application as originally filed the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

 the claims:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, as amended (together with any statement under Article 19)

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

 the drawings:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

 the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4.  The amendments have resulted in the cancellation of: the description, pages \_\_\_\_\_ the claims, Nos. \_\_\_\_\_ the drawings, sheets/fig \_\_\_\_\_5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP98/03535

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-7	NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

## 2. Citations and explanations

Cited document 1: J. Ferment. Technol., 1984, Vol. 62, No. 6, p. 569-575

Cited document 2: J. Ferment. Technol., 1984, Vol. 62, No. 4, p. 371-376

Cited document 3: Arch. Microbiol., 1992, Vol. 158, No. 1, p. 35-41

Cited document 4: Gene, 1987, Vol. 60, p. 1-11

Cited document 5: Yeast, 1996, Vol. 12, p. 1359-1366

Cited document 6: JP, 5-7491

Cited document 7: Agric. Biol. Chem., 1987, Vol. 51, No. 1, p. 93-100

Documents 1 through 3 describe that the GOGAT in a bacterium belonging to *Corynebacterium* participates in the production of L-glutamic acid.

Documents 4 and 5 describe the GOGAT gene arrangements of *Escherichia coli* and yeast respectively.

Document 6 describes that if an intended gene is integrated into the chromosome of a *Coryne* form bacterium, a microbe useful, for example, for fermentation and production of amino acids can be bred.

Document 7 describes *Brevibacterium lactofermentum* which is a bacterium of *Corynebacterium*.

It could have been easily conceived by a person skilled in the art, that the gene arrangement of GOGAT enzyme existing in a bacterium of *Corynebacterium* is cloned using the portion highly homologous in gene arrangement described in documents 4 and 5, as described in documents 1 through 3.

Furthermore, it could have been easily conceived by a person skilled in the art, that the gene obtained like this is introduced into the bacterium of *Corynebacterium* described in document 7, using the method described in document 6, for preparing a microbe used for producing L-glutamic acid.

Moreover, the method for amplifying the manifestation of an introduced gene could have been selected, as required, from the methods well known before the present application.